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Truncation and the Minimal Word

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1. INTRODUCTION

(1) Children's outputs are prosodically and segmentally unmarked (standardly-held view since Jakobson 1941/68; see e.g. Stampe 1969, Ingram 1989, Bernhardt & Stemberger 1998, Gnanadesikan 2004)

Problem 1: Rogue-like behaviour in early outputs:

(2) *Consonant harmony:*

Target:	Child:		
[dʌk]	[g̊ʌk]	'duck'	(Amahl at 2;2 (Smith 1973))
[sɔk]	[g̊ɔk]	'sock'	
[stikiː]	[g̊igiː]	'sticky'	

(3) *Locality:*
Theories of locality proposed for adult grammars forbid long-distance interaction among consonants for place features

Problem 2: Cross-linguistically marked behaviour in early outputs:

(4) *Truncation at Stage 2 (≈2;6-3 yrs):*

	Target:	Child Stage 1:	Child Stage 2:	
a.	[ǽksədənt]	[ǽdən]	[ǽkdən]	'accident'
b.	[úktəpʊs]	[úpʊs]	[úkpʊs]	'octopus'
c.	[báisəkəl]	[báikəl]	[báis.kəl]	'bicycle'

(5) *Markedness at Stage 2:*
Obstruent codas are disfavoured (*[k], *[s])
Absence of voicing assimilation in coda-onset obstruents is disfavoured (*[k.d])
If no agreement for [voice], coda should be voiced (*[k.d])
When no place agreement in flat-sonority clusters and coda is labial or dorsal, onset should be coronal (*[k.p])
Word-internal rhymes should be maximally binary branching (*[ais])

2. WORD MINIMALITY ANALYSIS

(6) Prosodic words are minimal words, i.e. exactly one binary foot.

(7) *Minimal word at Stage 1:* ‘cínnamon’ (Julia 1;11,15) (Pater 1997):

	FTBIN	PARSESYLL	ALIGNFOOT	MAX
a. $[(\text{sínɪ})_{\text{Ft}}\text{mən}]_{\text{PWd}}$		*!		
b. $[(\text{sínɪ})_{\text{Ft}}(\text{mə́n})_{\text{Ft}}]_{\text{PWd}}$			*!	
c. $[(\text{sí})_{\text{Ft}}]_{\text{PWd}}$	*!			*****
☞ e. $[(\text{símən})_{\text{Ft}}]_{\text{PWd}}$				**

Undominated markedness constraints (yield equivalent of ‘minimal word’ template):
FOOTBINARITY: Feet are binary (σσ or μμ)
PARSESYLLABLE: Syllables are parsed into feet
ALIGNFOOT (Align (Ft, L, PWd, L): Align the left edge of every foot with the left edge of the PWd

Low-ranking faithfulness constraint:
MAX-IO: Every segment in the input has a correspondent in the output

(8) *Codas at Stage 1:*

	PWD=FT	ANCHORRIGHT	NOCODA	MAX
a. $[(\text{símə})_{\text{Ft}}]_{\text{PWd}}$		*!		***
☞ b. $[(\text{símən})_{\text{Ft}}]_{\text{PWd}}$			*	**
c. $[(\text{sínmən})_{\text{Ft}}]_{\text{PWd}}$			**!	*

PWD=FT: abbreviation for undominated FTBIN, PARSESYLL, ALIGNFOOT
ANCHORRIGHT-IO: Elements at the right edge of the input word and the output word stand in correspondence
NOCODA: Codas are forbidden

(9) *Faithfulness at Stage 2:* Demotion of NOCODA:

	PWD=FT	ANCHORRIGHT	MAX	NOCODA
a. $[(\text{símə})_{\text{Ft}}]_{\text{PWd}}$		*!	***	
b. $[(\text{símən})_{\text{Ft}}]_{\text{PWd}}$			**!	*
☞ c. $[(\text{sínmən})_{\text{Ft}}]_{\text{PWd}}$			*	**

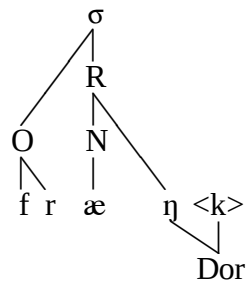
(10) Do truncated forms of the type in (9c) simply indicate that the child’s outputs have become more faithful to the input string, in contrast to (8b)? Do constraints on word shape (PWD=FT) continue to hold at Stage 2?

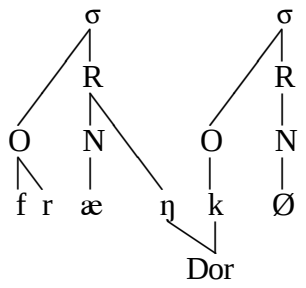
3. TERNARY RHYMES

(11) a. *PWd-internal rhymes:* Maximally binary in most languages:
[fræ̲n.tɪk] ‘frantic’, [frɪ̲k.ʃən] ‘friction’; *[fræ̲ŋ̲k.ʃən], *[frɪ̲j̲k.ʃən]

b. *PWd-final strings:* One extra position permitted:
[frænk] ‘frank’, [frijk] ‘freak’

(12) Word-final consonants are (a) extraprosodic or (b) onsets of empty headed syllables:

a.


b.


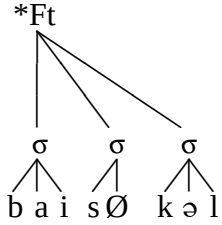
(13) *Consequences of (11):*
a. *[bais]$_{\sigma}$ [kəl]$_{\sigma}$

b. ✔[bai]$_{\sigma}$ [sØ]$_{\sigma}$ [kəl]$_{\sigma}$

c. *Carter & Gerken (1998):*
Found that a trace of the deleted vowel/syllable remains; propose that deletion affects the melodic content of weak syllables only, leaving the prosodic structure intact.

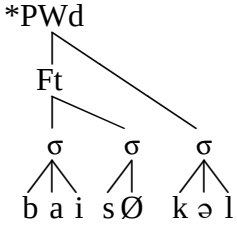
4. PROPOSAL FOR ‘TERNARY RHYME’ CASES

(14) *Problem 1:*
The entire output cannot be a single foot, as the first half of the form must itself be bisyllabic:



Violates FTBIN

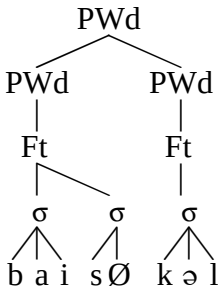
(15) The form cannot be bisyllabic foot + unparsed syllable:



Violates PARSESYLL

(16) *Problem 2:*
Why delete schwa when the resulting form, with a *word-internal* empty nucleus ([bai.sØ.kəl]), is cross-linguistically rare and more marked than the non-truncated form with schwa ([bai.sə.kəl])?

(17) *Proposal:*
The child's outputs are indeed constrained by PWD=FT. Words like 'bicycle' are structured as compounds:



Solves Problem 1 (satisfies FTBIN and PARSESYLL); compounding is productive at this period in development; empty nucleus is now PWd-final (cf. (11b)), no longer PWd-medial.

(18) *Problem 2 revisited:*
The empty position is now PWd-final, but still why delete the schwa?

(19) *Distributional property in rhotic dialects of English:*
Schwa is the most common realization of unstressed vowels PWd-internally, but it is rare PWd-finally. Few words end in schwa, in contrast to syllabic consonants (or [əC]) and [i].

This is likely tied to the fact that schwa lacks strong acoustic cues, and is thus disfavoured in positions where it cannot be well-perceived.

(20) *Result of schwa deletion = PWd-final onset:*
Word-final onsets are unmarked (Goad 2002, Goad & Brannen 2003)

(21) *Evidence:*

1. *Distributional properties* (Goad & Brannen 2003):
   There are no adult languages which lack word-internal codas and have word-final consonants which have a coda profile or display coda-like behaviour; in children's grammars, post-vocalic consonants emerge word-finally first.

2. *Release/Fortition* (Goad 2002, Goad & Brannen 2003):
   Lasan 21-25 mos (Fey & Gandour 1982):
   [dapʰ] 'drop'
   [vitʰ] 'feet'
   [dɔkʰ] 'talk'
   [dabm̩] 'stub'
   [vidn̩] 'feed'
   [bɪgŋ̩] 'big'

   Yapese (Jensen 1977):
   Plain voiceless stops are "aspirated" (finally released) word-finally

   Continental French (Tranel 1987):
   All final consonants are typically overtly released

3. *Parsing* (Goad 2002):
   Word-final codas are good cues to the right edge of the syllable and thus bad cues to the right edge of the word; word-final onsets are good cues to the right edge of the word

5. PROPOSAL FOR ILL-FORMED CODA+ONSET CASES

(22) [ǽksədənt] → [ǽk͟kdən] 'accident' (4a)
[úktəpʊs] → [úk͟ppʊs] 'octopus' (4b)

(23) Bad syllable contact is not a problem if the two consonants are not adjacent (17):
[[ǽkØ]$_{PWd}$[dən]$_{PWd}$]$_{PWd}$ [[ɑ́kØ]$_{PWd}$[pʊs]$_{PWd}$]$_{PWd}$

6. PREDICTIONS

(24)
1. No constraints should hold between the medial consonants in truncated outputs like [ækdən] 'accident', as each consonant belongs to a separate PWd.
2. In truncated outputs of words like 'bicycle', both VV and the following C should be retained, [baiskəl], as they belong to separate syllables, [bai.sØ]$_{PWd}$.
3. There should be some trace of the deleted vowel, for example length on or release of the preceding consonant: [baisˑkəl], [ækʰdən].
4. Each constituent in the derived compound should bear stress, e.g. [báiskəl] and [ǽkdə̀n].

7. CASE STUDY

(25) *Methodology:*
Picture-naming task, with stimuli of the following shapes:

3-syllable target:	Expected trunc:	2-syllable target:	2-syllable compound:
[ɛləfən] 'elephant'	[ɛlfən]	[dɑlfən] 'dolphin'	[sɛlfoːn] 'cell phone'
[baisəkəl] 'bicycle'	[baiskəl]	[bæskət] 'basket'	[aiskriːm] 'ice cream'

(26) One child (aged 2;11); six patterns of behaviour observed for 3-syllable targets:

• Two patterns consistent with standard analysis that truncation = one foot:

1. When the sonority profile that results from truncation is good, the form is parsed as a single foot/PWd	[ɛ́lfɛn] [háspʌo]	'elephant' 'hospital'
2. When the sonority profile is bad, one of the consonants is deleted and the result is a single foot	[mɛ́sɪn] [ǽgɪnʔ]	'medicine' 'accident'

• Four patterns consistent with compound analysis of truncation:

3. When the rhyme which would result from truncation is ternary V_iV_jC, the vowel may be parsed in hiatus and the final syllable bears stress	[dá.in][sòr] [dáin][sòr]	'dinosaur' 'dinosaur'
4. The medial unstressed vowel may be augmented and stressed; the final vowel is stressed; this may happen when the coda-onset profile that would result from truncation is good ('porcupine') or bad (the others)	[pór][kì][pa̋ı)] [ʔák][tɐ̀][pòs] [ǽk][sɨ][dɛ̃ʔ] [kǽn][tʌ][lɜòp] [bɑ́][kə̀][ɲ]	'porcupine' 'octopus' 'accident' 'cantaloupe' 'broccoli'
5. When there is a trace of the medial vowel, the final syllable is stressed	[hásᵊ][pʌo] [dá.inː]#[sòr]	'hospital' 'dinosaur'
6. Some forms could be parsed as one foot, but are still parsed as two feet (quality of V_2 relevant?)	[ǽː][mòz] [ɛ́l][fæ̀n]	'animals' 'elephant'

8. CONCLUSION

(27) The source of explanation for the marked truncated outputs lies in positing abstract representations which are not immediately observable from an examination of the surface string: compounding, and PWd-final onsets. PWD=FT is still an important factor.

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